

CLAIMS

1 1. A magnetic-ring structure comprising at least two states and at least one twisted state
2 that includes a 360° domain wall that can exist over a wide range of applied fields.

1 2. The magnetic-ring structure of claim 1, wherein said at least two states comprise at
2 least one onion state.

1 3. The magnetic-ring structure of claim 1, wherein said at two states comprise at least
2 one vortex state.

1 4. The magnetic-ring structure of claim 1, wherein said at least one twisted state
2 comprises two states.

1 5. The magnetic-ring structure of claim 1, wherein said at least one twisted state
2 comprises four states.

1 6. A magnetoresistive readback mechanism for retrieving magnetic information
2 comprising:
3 a spacer layer;
4 a pinned magnetic layer that is coupled to said spacer layer;
5 a magnetic storage layer that is coupled to spacer layer that includes a magnetic-
6 ring comprising at least two states and at least one twisted state that includes a 360°
7 domain wall that can exist over a wide range of applied fields.

1 7. The magnetoresistive readback mechanism of claim 6, wherein said at least two states
2 comprise at least one onion state.

- 1 8. The magnetoresistive readback mechanism of claim 6, wherein said at two states
2 comprise at least one vortex state.
- 1 9. The magnetoresistive readback mechanism of claim 6 wherein said at least one
2 twisted state comprises two states.
- 1 10. The magnetoresistive readback structure of claim 6, wherein said at least one twisted
2 state comprises four states.
- 1 11. The magnetoresistive readback structure of claim 6 further comprising an
2 antiferromagnetic structure.
- 1 12. A method of operating a magnetic-ring structure comprising:
2 providing said magnetic-ring structure with at least two states; and
3 providing at one twisted state that includes a 360° domain wall that can exist over
4 a wide range of applied fields.
- 1 13. The method of claim 12, wherein said at least two more states comprise at least one
2 onion state.
- 1 14. The method of claim 12, wherein said at least two states comprise at least one vortex
2 state.
- 1 15. The method of claim 12, wherein said at least one twisted state comprises four states.
- 1 16. The method of claim 12, wherein said at least one twisted state comprises two states.